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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Atty. Docket No.: 2551-026

Douglas M. BLAIR

Appln. No.: 09/881,234

Group Art Unit: 1631

Filing Date: Jun. 14, 2001

Examiner: Smith, C.

For: **APPARATUS AND METHOD FOR PROVIDING SEQUENCE  
DATABASE COMPARISON**

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**REPLY BRIEF TRANSMITTAL**  
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Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

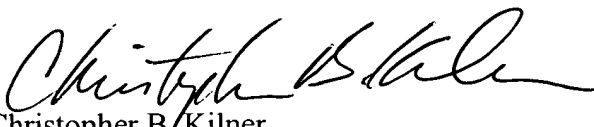
Dear Sir:

Enclosed, please find:

1. Appellant's Reply Brief in response to the Examiner's Answer dated April 3, 2006.

The Commissioner for Patents is hereby authorized to charge all necessary fees or credit any overpayments to the Deposit Account No. 18-1579. A duplicate copy of this letter is enclosed.

Respectfully submitted,

  
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**APPELLANT'S REPLY BRIEF UNDER 37 C.F.R. § 41.41**  
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Dear Sir:

In accordance with the provisions of 37 C.F.R. § 41.41, Appellant submits the following:

(i) *Real party in interest.*

The Examiner's Answer fails to address the real party in interest, which Appellant correctly stated is Parabon Computation, Inc. in the Amended Brief on Appeal.

(ii) *Related appeals and interferences.*

The Examiner's Answer is correct in regard to related appeals or interferences.

(iii) *Status of claims.*

The Examiner's Answer is correct in regard to the status of the claims.

**(iv) *Status of amendments.***

The Examiner's Answer is correct in regard to the status of amendments.

**(v) *Summary of claimed subject matter.***

The Examiner's Answer is correct in regard to the summary of claimed subject matter.

**(vi) *Grounds of rejection to be reviewed on appeal.***

The Examiner's Answer is correct with respect to the grounds of rejection to be reviewed on appeal.

**(vii) *Argument***

***Grounds 1***

***Claim Rejections - 35 USC §112***

The Examiner's Answer finds the Appellant's arguments with respect to 35 USC 112 unpersuasive for various reasons, including:

“because several task definitions are previously mentioned in the claims which do not necessarily have the same properties, as such a limitation is not present in the claims;”

“as ‘said task definition’ is equally applicable to be referring to other ‘task definition’ recitations;”

“as there is nothing in the instant claims that would lead one to reasonably conclude that the task definitions were all the same;” and

“as there are multiple ‘task definition’ recitations found in these claims (i.e. claim 1, lines 8, 10, 16, 17).”

However, each of these reasons is clearly erroneous. In regard to the allegation that “several task definitions are previously mentioned in the claims which do not necessarily have the same properties, as such a limitation is not present in the claims,” Appellant submits that (i) the term “a task definition” that could be an antecedent for “said task definition” only occurs twice in claims 1 and 13, and (ii) that the claims, in fact, do have a limitation that defines task definitions as having the same properties,

namely “wherein task definitions comprise at least one comparison parameter, at least one executable element capable of performing comparisons, a query data element identification(ID)/descriptor, and a subject data element ID/descriptor.”

In regard to the allegation that “‘said task definition’ is equally applicable to be referring to other ‘task definition’ recitations,” Appellant again submits that the term “a task definition” that could be an antecedent for “said task definition” only occurs twice in claims 1 and 13, and that the first occurrence of the term in the phrase “a task definition for each task,” when only the plural term “tasks” has been previously cited, is inherently plural and would have to be later referred to as “said task definitions” if referring to that particular occurrence of the term.

In regard to the allegation that “there is nothing in the instant claims that would lead one to reasonably conclude that the task definitions were all the same,” Appellant again notes that the claims, in fact, do have a limitation that defines task definitions as having the same properties, namely “wherein task definitions comprise at least one comparison parameter, at least one executable element capable of performing comparisons, a query data element identification(ID)/descriptor, and a subject data element ID/descriptor.”

In regard to the allegation that “there are multiple ‘task definition’ recitations found in these claims (i.e. claim 1, lines 8, 10, 16, 17),” Appellant reproduces claim 1 below to illustrate that the term “a task definition” that could be an antecedent for “said task definition” only occurs twice in claims 1, and that the first occurrence of the term in the phrase “a task definition for each task,” when only the plural term “tasks” has been previously cited, is inherently plural and would have to be later referred to as “said task definitions” if referring to that particular occurrence of the term.

Indeed, claim 1 (with emphasis added) states:

1. A method of comparing a query dataset N with a subject dataset M, comprising:  
  
dividing said query dataset N into  $n_N$  data elements having a size within a specified range;  
  
dividing said subject dataset M into  $n_M$  data elements having a size within said specified range;

determining a number of **tasks** for an entire comparison of datasets N and M as  $n_N \times n_M$ ;

sending all **data elements** and **task definitions** to a master central processing unit (CPU) of a master-slave distributed computing platform,

wherein **task definitions** comprise at least one comparison parameter, at least one executable element capable of performing comparisons, a query data element identification(ID)/descriptor, and a subject data element ID/descriptor, and

wherein **data elements** are sent alternately from query and subject data elements;

sending a **task definition for each task** from the master CPU to **one of a plurality** of slave CPUs when all parts of a **task definition** and **data elements referenced by said task definition** are available at said master CPU;

sending **data elements referenced by said task definition** to said slave CPU;

performing each task on a slave CPU; and

returning task results for each task to said master CPU.

Indeed, the phrase that must be reasonably clear is “sending a task definition for each task from the master CPU to one of a plurality of slave CPUs when all parts of a task definition and data elements referenced by said task definition are available at said master CPU.” Appellants submit that “sending a task definition for each task from the master CPU to one of a plurality of slave CPUs” is clear and unambiguous. This is done “when all parts of a task definition and data elements referenced by said task definition are available at said master CPU.” In this context, “all parts of a task definition” clearly means the at least one comparison parameter, at least one executable element capable of performing comparisons, a query data element identification(ID)/descriptor, and a subject data element ID/descriptor for each one of the task definitions sent from the master CPU, and “data elements referenced by said task definition” clearly refers to the query and subject data elements identified by the previously claimed “parts of a task definition.”

In rejecting Appellant's argument that a rejection based on lack of antecedent basis under 35 USC 112 is, in fact, based on the scope of the claim, the Examiner's Answer ignores MPEP 2173, which states that the “primary purpose of this requirement

of definiteness of claim language is to ensure that the scope of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent.”

## *Grounds 2*

### *Claim Rejections - 35 USC 103*

The Examiner's Answer addresses Appellant's arguments regarding the lack of motivation to combine references by repeating the stated motivation of “making improvements to analysis server sites...to further simplify access and improve analysis resources” by citing to portions of the primary reference to Smith et al. to state that it would have been obvious to compress data and use looping processes as “stated by” Altschul et al. and Reed et al. “in the method of Smith et al., where the motivation would have been to offer enhanced, integrated, easy-to-use, and time-saving techniques to a large number of useful molecular biology database search and analysis services wherein the motivation for organizing and improving access to these tools for genome researches worldwide is found in Smith et al.”

These arguments and motivations make no logical sense. Smith et al. already discloses how to “simplify access and improve analysis resources” and “offer enhanced, integrated, easy-to-use, and time-saving techniques to a large number of useful molecular biology database search and analysis services wherein the motivation for organizing and improving access to these tools for genome researches worldwide” and thus **has no reason to be modified**. Additionally, there is **no logical link whatsoever** with the stated motivation and **why** it would have been obvious to one of ordinary skill in the art to modify Smith et al. to “compress data” and use “looping processes” as allegedly “stated by” the secondary references since compressing data and using looping processes are unrelated to simplifying access, improving analysis resources, or organizing and improving access to genomic tools.

The Examiner's Answer further alleges that Appellant failed to “negate the motivation described above or offer reasons as to why it might be considered improper.” This is simply erroneous. Pages 11-14 of Appellant's Brief on Appeal of January 11, 2006 clearly address why the claimed invention *as a whole* and the prior art *as a whole* have not been properly considered by the Examiner. The prior art *as a whole* **teaches**

away from the asserted combination. Page 15 of Appellant's Brief on Appeal addresses the stated motivation as "not only incomprehensible, but it further is *completely unrelated to limitations of the claimed invention*. It is clearly an improper hindsight reconstruction, not even of the claimed invention, but merely for the purpose of combining the disparate references that the Examiner found that use appropriate words like 'BLAST,' 'server,' 'network,' 'distributed,' 'database,' and 'compression,' which apparently turned up in the required electronic text searches."

As to the Examiner's arguments regarding "the words of the claim must be given their 'plain meaning'..." Appellant again notes that the Examiner **has not looked up the words of the claim** (i.e., "a master central processing unit (CPU) of a master-slave distributed computing platform"), but rather a term ("system") used in the prior art of Smith et al. The prior art either discloses something to one of ordinary skill in the art or it doesn't, and Smith et al. does not disclose "a master central processing unit (CPU) of a master-slave distributed computing platform" as that term is understood by one of ordinary skill in the art.

Indeed, it is this fundamental mistake by the Examiner that allows a "system," such as disclosed in Smith et al. comprising a web portal for bioinformatics resources that allows serial batch processing, to be misused as a primary reference in claims drawn to a distributed computing platform and method. Indeed, the failure of Smith et al. to disclose what the Examiner alleges (i.e., a master central processing unit (CPU) of a master-slave distributed computing platform) is fatal to all of the rejections in the application.

*Reply to Arguments - old Grounds 5 (now Grounds 2)*

On page 22 of the Examiner's Answer, the Examiner begins discussing the prior arguments made with respect to prior Grounds 5, now Grounds 2.

In dismissing Appellant's arguments, the Examiner's Answer alleges that "a distributed computing platform" has been broadly interpreted, when in fact, as discussed above, the Examiner interpreted the term "system" from Smith et al. and not the claimed term - "a master central processing unit (CPU) of a master-slave distributed computing platform."

With respect to dataset-to-dataset comparison, Appellant notes that the present

specification distinguishes sequence-to-dataset and dataset-to-dataset comparisons. Paragraph 9 states “speedy comparison of single sequences to databases, genomes, or proteomes, while still important, is less desirable than sensitive methods for comparison of these datasets to one another in their entirety.” Indeed, the specification refers to entire genomes and databases as datasets, but never refers to sequences as datasets. Indeed, in this regard, the Examiner’s Answer admits that “Smith et al. describe performing searches for a *query sequence* with various databases...” and erroneously alleges that this represents “comparing datasets.”

Even if one considered Smith et al. to disclose dataset-to-dataset comparison, it fails to disclose or suggest dividing *both* of the datasets, determining a number of tasks as  $n_N \times n_M$ , sending *all* data elements and task definitions to a master central processing unit (CPU) of a master-slave distributed computing platform, wherein task definitions comprise at least one comparison parameter, at least one executable element capable of performing comparisons, a query data element identification(ID)/descriptor, and a subject data element ID/descriptor, sending a task definition for each task from the master CPU to one of a plurality of slave CPUs, performing each task on a slave CPU, and returning task results for each task to said master CPU. The citation of “nucleic acid searches,” “nucleic acid searches,” and “EST database” in the Examiner’s Answer only serve to confirm that the prior art of Smith et al. teaches the ordinary sequence-to-sequence and sequence-to-database comparisons that are discussed in the prior art portion of the present specification rather than dataset-to-dataset comparison.

With respect to claim 4, the Examiner’s Answer alleges that the disclosure of transferring of data and metadata in Reed et al. “represents a separation or stripping of metadata from data.” Appellant submits this is erroneous. Reed et al. teaches the sending of both (data and metadata are inherently “separate” in that one is data and the other is information about the data), and thus no metadata is stripped as required by the claim.

The discussion of Reed et al. with respect to claims 6 and 18 is so far afield of the claimed subject matter and so attenuated and reaching as to not merit comment beyond the fact that it discloses nothing even remotely related to the claimed subject matter.

With respect to claims 7 and 19, the Examiner’s Answer characterizes the Appellant’s arguments as “the prior art fails to teach the storing steps.” More accurately,



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Appellant submits that Smith et al. fails to disclose or suggest the combination of:

- storing index information for said query and said subject sequence;
- storing bounds information for start and stop of said query and subject sub sequences;
- storing data that quantify fulfillment of significance criteria for a significant match; and
- storing an efficiently encoded representation of alignment between said bounds corresponding to a high-scoring segment pair.

The alleged “list (index)” and other information allegedly disclosed in figure 2 of Smith et al. by reference to certain boxes of the figure is, frankly, ridiculous. Figure 2 of Smith et al. merely includes a few standard search results (GenBank sequence report for the matched sequence of a BLAST hit) and the supplemental information (hyperlinks) added by the BCM Search Launcher server, as explained on page 459. Since a typical BLAST run uses known sequences, index and bounds information required by dividing the dataset in the present invention is not needed, just as the reassembly via a task results file (claims 9-10, 20-21) and concatenating (claims 11-12, 22-23) are also not needed.

**CONCLUSION**

For the above reasons, Appellants respectfully submit that the present claims meet the requirements of 35 U.S.C. 112 and that the Examiner has failed to make out a *prima facie* case of obviousness under 35 U.S.C. 103 with regard to claims 1, 4, 6-13, and 18-23 and asks that the indefiniteness and obviousness rejections be reversed.

Respectfully submitted,



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